ESD-TR-68-56

Bibliography

36

1 of 1

Lincoln
Laboratory
Library

Millstone and Haystack Scientific and Technical Publications

9 April 1968

Prepared under Electronic Systems Division Contract AF 19(628)-5167 by

Lincoln Laboratory
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Lexington, Massachusetts

MILLSTONE and HAYSTACK SCIENTIFIC and TECHNICAL PUBLICATIONS

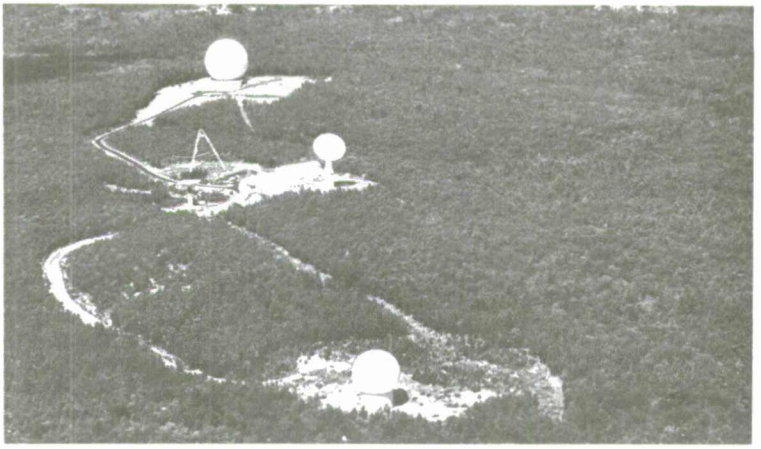
BIBLIOGRAPHY 36

9 APRIL 1968

Lincoln Laboratory is a center for research operated by Massachusetts Institute of Technology with the support of the U.S. Air Force under Contract AF 19(628)-5167.

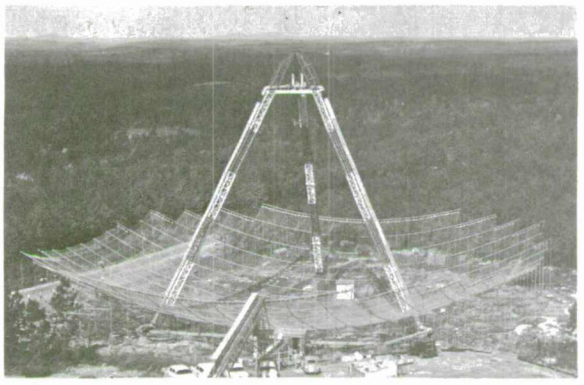
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

LINCOLN LABORATORY LEXINGTON, MASSACHUSETTS

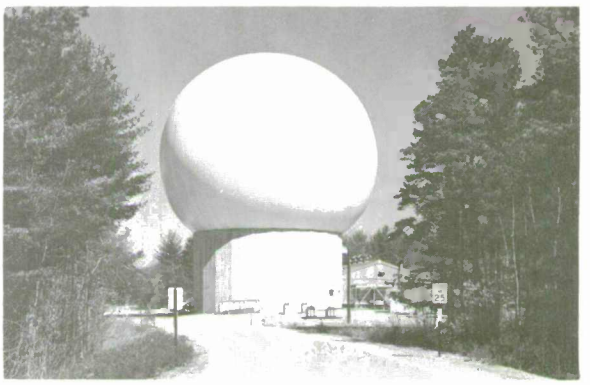


Foreground, Westford Communications Terminal; middle, Millstone Hill Radar and Ionospheric Research Facility; background, Haystack Microwave Research Facility

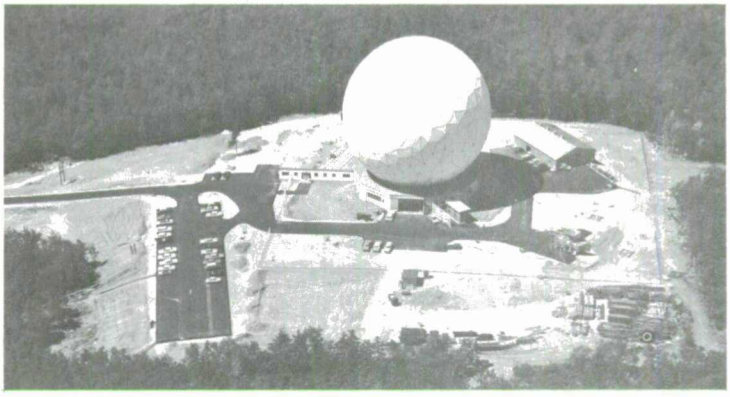
Millstone Hill Radar and Ionospheric Research Facility



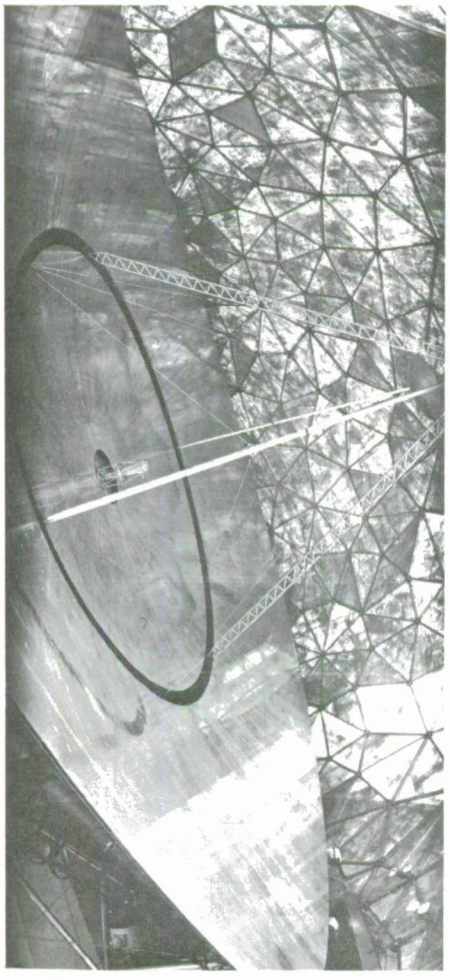
Zenith-pointing ionospheric research antenna



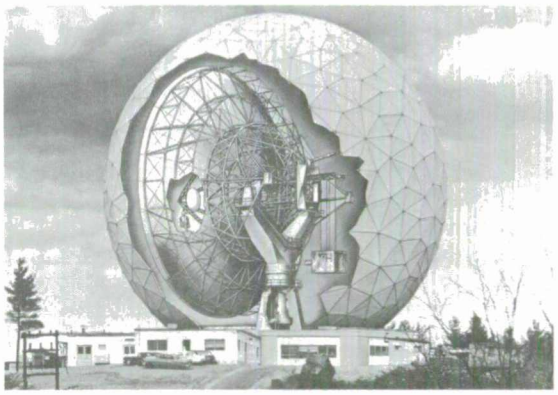
Westford Communications Terminal



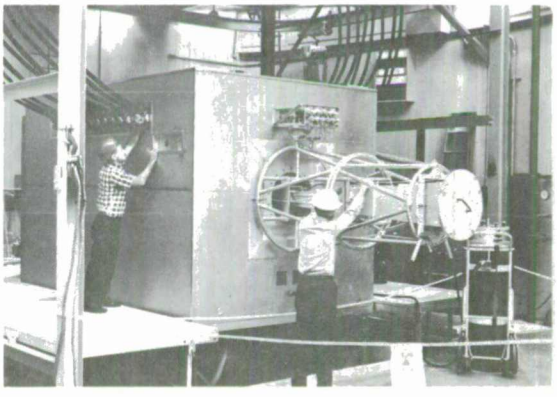
Haystack Microwave Research Facility



Precision-surface primary and secondary reflectors



Antenna system with plug-in RF electronics being hoisted into place



Planetary Radar Box

MILLSTONE AND HAYSTACK
SCIENTIFIC AND TECHNICAL PUBLICATIONS

This document is a bibliography of most of the significant publications, in whatever form, resulting from the work conducted at the Millstone Radar Facility and the Haystack Microwave Research Facility, two of the major instruments at Lincoln Laboratory's Millstone Hill Field Station.

The original Millstone Radar which went into operation in the fall of 1957 was unusual in many respects, among them its high average power (150 kw) at 68-cm wavelength and its agile 84-foot diameter antenna system. It was the first radar to utilize a large general-purpose digital computer as an integral part of the radar system for real-time data processing and control purposes. This was the CG24, perhaps the earliest all-solid-state computer, developed at Lincoln Laboratory for this application.

Over the intervening years the Field Station instrumentation has developed to include an updated version of the Millstone Radar having 18 db more overall sensitivity than the original version, a 220-foot diameter fixed-dish Thomson Scatter Radar Facility operating at UHF, and the Haystack facility. Thomson Scatter work began at Millstone in 1960 and has been an intensive program since 1963. In 1964, Haystack became an operational part of the Field Station instrumentation. At this writing, it incorporates the world's most sensitive planetary radar system, with a transmitter power output of nearly 500,000 watts at a wavelength of 3.8 cm. With this radar complementing the observations possible with the upgraded Millstone configuration, a variety of studies of the planetary and lunar motions, surfaces and atmospheres have been carried out at several wavelengths. Additionally the Haystack facility provides for Radio Astronomy observations, both continuum and spectral-line, at a number of frequencies from 18-cm through 8-mm wavelength.

In addition to the work mentioned above, the Station carries out research programs in space surveillance and tracking techniques and studies of atmospheric propagation and refraction as they affect radar tracking and space communications performance.

Accepted for the Air Force
Franklin C. Hudson
Chief, Lincoln Laboratory Office

Contents

* * *

In the following bibliography, citations are arranged according to the subject divisions listed in the table of contents above. Citations under each subject heading appear in inverse chronological order, with the most recent publication at the head of the list.

The numbers preceded by "LL" are Lincoln Laboratory identification. LL GR stands for a Group Report; TR is a Technical Report; JA is a Journal Article; MS is a Meeting Speech.

Reports cited in this Bibliography may be obtained as follows:

DDC (Defense Documentation Center)

Reports having AD numbers may be obtained by authorized users of DDC by processing the standard form 1.

Organizations not registered with DDC may procure copies as follows:

Articles assigned CFSTI numbers may be purchased at the standard prices of $3.00 per paper copy or 65 cents per microfiche from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia, 22151.

Papers assigned H numbers may be purchased at the prices indicated (M = 35mm microfilm, P = photoprint) from the M.I.T. Microreproduction Laboratory, Rm. 14-0551, Cambridge, Mass., 02139.

Inquiries concerning Laboratory report series should be directed to MIT Lincoln Laboratory, Distribution Office (L-375), Lexington, Mass., 02173.

Inquiries relating to the use and operation of the Haystack and Millstone facilities should be referred to Paul B. Sebring, Group Leader, Group 31, M.I.T. Lincoln Laboratory, Haystack Hill Site, Westford, Mass., 01886.

Millstone and Haystack
Scientific & Technical Publications

Theses from Research at Haystack

Emission and absorption of microwave radiation by interstellar OH
A.E.E. Rogers
Ph.D. Thesis, 198 pp. (10 Mar. 1967) M.I.T. Dept. of E.E.

Observations of several discrete radio sources at 3.64 and 1.94 centimeters
R.J. Allen
Ph.D. Thesis, 162 pp. (9 Jan. 1967) M.I.T. Dept. of Physics

An automated procedure for the mapping of extended radio sources
J.C. Henry
M.S. Thesis, 138 pp. (3 Sept. 1965) M.I.T. Dept. of E.E.

Atmospheric temperature structure from the microwave emission of oxygen
B.R. Fow
M.S. Thesis, 124 pp. (20 Jan. 1964) M.I.T. Dept. of Meteorology

Digital Tracking Loop for High-Powered Experimental Radar
E.C. Fraser
M.S. Thesis, 121 pp. (22 Aug. 1960) M.I.T. Dept. of E.E.

Moon

A Radar Study of the Lunar Crater Tycho at 3.8 and 70 cm Wavelength
G.H. Pettengill, T.W. Thompson
Accepted by Icarus LL JA 3141

Radar Studies of the Moon
Lincoln Laboratory Group 31 - Quarterly Progress Reports

31 Aug. 1967, 26 pp. Final Report Vol. I	CFSTI N67-40153
15 May 1967, 12 pp.	CFSTI N67-30072
15 Feb. 1967, 18 pp.	CFSTI N67-83121
15 Nov. 1966, 17 pp.	CFSTI N67-12071
15 Aug. 1966, 37 pp.	CFSTI N66-37544
15 May 1966, 51 pp.	CFSTI N66-29738
15 Feb. 1966, 71 pp.	CFSTI N66-23639

A Study of the Depolarization of Lunar Radar Echoes
T. Hagfors
Radio Sci. 2, 445-465 (May 1967) LL JA 2943

Study of Radio Echoes from the Moon at 23 Centimeters Wavelength
J.V. Evans, T. Hagfors
J. Geophys. Res. 71, 4871-4889 (15 Oct. 1966)
LL JA 2765

Some Recent Lunar Radar Observations and Their Interpretation
T. Hagfors
NEREM Record 8, 136 (1966) LL MS 1729

Tenuous Surface Layer on the Moon: Evidence Derived from Radar Observations
T. Hagfors, R.A. Brockelman, H.H. Danforth, L.B. Hanson, G.M. Hyde
Science 150, 1153-1156 (26 Nov. 1965) LL JA 2627 DDC 628565

Draft Program Description for Radar and Radiometric Lunar Surface Studies
P.B. Sebring, Editor
20 Nov. 1964, 45 pp. LL GR 1964-65 DDC AD-609384
CFSTI AD-609384

Backscattering from an Undulating Surface with Applications to Radar Returns from the Moon
T. Hagfors
J. Geophys. Res. 69, 3779-3784 (15 Sept. 1964)
LL JA 2365

On the Interpretation of Radar Reflections from the Moon
J.V. Evans, T. Hagfors
Icarus 3, 151-160 (July 1964) LL JA 2343

Radar Observations of the Moon at a Wavelength of 8.6 Millimeters
V.L. Lynn, M.D. Sohigian, E.A. Crocker
J. Geophys. Res. 69, 781-783 (15 Feb. 1964)
LL JA 2262

Radar Observations of the Moon at 8.6-mm Wavelength
V.L. Lynn, M.D. Sohigian, E.A. Crocker
8 Oct. 1963, 24 pp. LL TR 331 DDC AD-426207
CFSTI AD-426207

The Radar Cross Section of the Moon
J.V. Evans, G.H. Pettengill
J. Geophys. Res. 68, 5098-5099 (1 Sept. 1963)
LL JA 2192

A Lunar Theory Reasserted - A Rebuttal
J.V. Evans
J. Research Natl. Bur. Standards 67D, 1-4 (Jan.-Feb. 1963)
LL JA 1988

The Scattering Properties of the Lunar Surface at Radio Wave Lengths
J.V. Evans, G.H. Pettengill
The Solar System, IV, Chapt. 5, pp. 129-161, "The Moon, Meteorites, and Comets", (Univ. of Chicago Press, 1963)
LL JA 1748

Radio-Echo Studies of the Moon at 7.84-Meter Wavelength
J.V. Evans, R.P. Ingalls
20 Nov. 1962, 28 pp. LL TR 288 DDC AD-294008
CFSTI AD-294008

Enhancement of Radar Reflectivity Associated with the Lunar Crater Tycho
G.H. Pettengill, J.C. Henry
J. Geophys. Res. 67, 4881-4885 (Nov. 1962)
LL JA 1992

Radar Studies of the Lunar Surface
J.V. Evans
NEREM Record 4, 48-49 (1962) LL MS 595

Radio Echo Studies of the Moon
J.V. Evans
Proc. Conf. on Lunar Exploration, Virginia Polytechnic Institute, Aug. 1962
LL MS 645

Radio-Echo Observations of the Moon at 68-cm Wavelength
J.V. Evans
22 June 1962, 24 pp. LL TR 272 DDC AD-291102
CFSTI AD-291102

Radio-Echo Observations of the Moon at 3.6-cm Wavelength
J.V. Evans
19 Feb. 1962, 38 pp. LL TR 256 DDC AD-274669
CFSTI AD-274669

The Scattering Behavior of the Moon at Wavelengths of 3.6, 68 and 784 Centimeters
J.V. Evans, G.H. Pettengill
J. Geophys. Res. 68, 423-447 (15 Jan. 1962)
LL JA 1994

Band-Pass Measurements of a Lunar Reflection Circuit
R.P. Ingalls, L.E. Bird, J.W.B. Day
Proc. IRE 49, 631-632 (March 1961) LL JA 1650A

The Scattering Properties of the Lunar Surface at Radio Wavelengths
J.V. Evans
10 Jan. 1961, 42 pp. LL GR 3G-0004 DDC AD-250684
CFSTI PB-154375

A Study of UHF Space Communications Through an Aurora Using the Moon as a Reflector
R.P. Ingalls, J.C. James, M.L. Stone
Planet. Space Sci. 7, 272-285 (1961) LL JA 1350

Moon (continued)

Radar Measurements of the Lunar Surface
G.H. Pettengill, J.C. Henry
Proc. Lunar Symp. of Intl. Astronomical Union, Leningrad, Dec. 1960;
or Advances in the Astronautical Sciences, 8, 564-570 (Plenum Press, New York, 1963) LL MS 172

Radio Communication Using Moon Reflected Signals
J.V. Evans
19 Dec. 1960, 32 pp. LL GR 3G-0003 DDC AD-249355
H-237 M-1.50 P-10.60

Lunar Communication Test Summary - 1959
P.B. Sebring
30 Sept. 1960, 9 pp. LL GR 30G-0011 DDC AD-244207
CFSTI PB-152466

Radio Echo Studies of the Moon
J.V. Evans
30 Aug. 1960, 51 pp. LL GR 3G-0001

Measurements of Lunar Reflectivity Using the Millstone Radar
G.H. Pettengill
Proc. IRE (Correspond.) 48, 933-934 (May 1960)
LL JA 1563

Moon Relay Communication
W.H. Radford
IRE Intl. Conv. Record 8, pt.5, 227-283 (1960)
LL MS 25

Planets

Variations in the Radar Cross Section of Venus
J.V. Evans
Accepted by Astron. J. LL JA 3153

Fourth Test of General Relativity: Preliminary Results
I.I. Shapiro, G.H. Pettengill, M.E. Ash, M.L. Stone, W.B. Smith, R.P. ~~Engels~~ Ingalls, R.A. Brockelman
Submitted to Phys. Rev. Letters LL JA 3243

Planetary Radar Astronomy
I.I. Shapiro
Spectrum 5, 70-79 (Mar. 1968) LL JA 3207 DDC AD-655315

Radar Determination of Planetary Motions and Their Interpretations
I.I. Shapiro, M.E. Ash, W.B. Smith
NEREM Record 9, 177 (1967) LL MS 2046

Radar Observations of Venus at 6m, Preliminary Results
W.B. Smith, I.I. Shapiro, K.L. Bowles
NEREM Record 9, 176 (1967) LL MS 2056

Radar Determination of the Rotations of Venus and Mercury
R.B. Dyce, G.H. Pettengill, I.I. Shapiro
Astron. J. 72, 351-359 (April 1967) LL JA 2899 DDC AD-658774

Astronomical Constants and Planetary Ephemerides Deduced from Radar and Optical Observations
M.E. Ash, I.I. Shapiro, W.B. Smith
Astron. J. 72, 338-350 (April 1967) LL JA 2893 DDC AD-658914

Radar Measurements at 70cm of Venus and Mercury
G.H. Pettengill, R.B. Dyce, D.B. Campbell
Astron. J. 72, 330-337 (April 1967)

Planetary Radar Astronomy
I.I. Shapiro
Moon and Planets pp. 103-125 (North-Holland, Amsterdam, 1967)
LL MS 1658

Radar Signatures of the Planets
J.V. Evans
Ann. N.Y. Acad. Sci. 140, 196-257 (16 Dec. 1966)
LL MS 1484

Radar Observations of Venus at 23 cm in 1965/1966
J.V. Evans, R.A. Brockelman, E.N. Dupont, L.B. Hanson, W.A. Reid
Astron. J. 71, 897-901 (Nov. 1966) LL JA 2840 DDC AD-648056

Radar Observations of Venus at 3.8-cm Wavelength
J.V. Evans, R.P. Ingalls, L.P. Rainville, R.R. Silva
Astron. J. 71, 902-915 (Nov. 1966) LL JA 2797 DDC AD-653360

Radar Verification of the Doppler Formula
I.I. Shapiro, M.E. Ash, M.J. Tausner
Phys. Rev. Letters 17, 933-939 (24 Oct. 1966)
LL JA 2905 DDC AD-646487

General Relativity and Its Effects on Planetary Orbits and Interplanetary Observations
M.J. Tausner
7 Oct. 1966, 57 pp. LL TR 425 DDC AD-650730
CFSTI AD-650730

The Rotation of the Planet Mercury
G. Colombo, I.I. Shapiro
Astrophys. J. 145, 296-307 (July 1966) LL JA 2815 DDC AD-642209

Ross-Schiff Analysis of a Proposed Test of General Relativity: A Critique
I.I. Shapiro
Phys. Rev. 145, 1005-1010 (27 May 1966) LL JA 2710 DDC AD-642228

Testing General Relativity with Radar
I.I. Shapiro
Phys. Rev. 141, 1219-1222 (Jan. 1966) LL JA 2656 DDC AD-636372

Radar Determination of Planetary Motions
I.I. Shapiro
Trans. of the Intl. Astron. Union 12B, 615-623 (1966)
LL MS 1156

Solar Rotation and Planetary Orbits
I.I. Shapiro
Icarus 4, 549-550 (Dec. 1965) LL JA 2663 DDC AD-631165

Radio Echo Observations of Venus and Mercury at 23 cm Wavelength
J.V. Evans, R.A. Brockelman, J.C. Henry, G.M. Hyde, L.G. Kraft, W.A. Reid, W.W. Smith
Astron. J. 70, 486-501 (Sept. 1965) LL JA 2573 DDC AD-624731

Program Description - Radar Observations of the Planets
J.W. Meyer
9 Julv 1965, 42 pp. LL TN 1965-35 DDC AD-619708
CFSTI AD-619708

Fourth Test of General Relativity
I.I. Shapiro
Phys. Rev. Letters 13, 789-791 (28 Dec. 1964)
LL JA 2483 DDC AD-613894

Effects of General Relativity on Interplanetary Time-Delay Measurements
I.I. Shapiro
18 Dec. 1964 LL TR 368 DDC AD-614232

Radar Observations of Venus at 3.6 Centimeters
D. Karp, W.E. Morrow, Jr., W.B. Smith
Icarus 3, 473-475 (Dec. 1964) LL JA 2467 DDC AD-613893

Radar Observations of Venus at 38 Mcps
J.C. James, R.P. Ingalls
Astron. J. 69, 19-22 (Feb. 1964) LL JA 2182

Radar Observations of Venus, 1961 and 1959
W.B. Smith
Astron. J. 68, 15-21 (Feb. 1963) LL JA 2053

Planets (continued)

Radar Measurements of Venus
G.H. Pettengill
Proc. Third Intl. Space Science Symp., pp. 872-885, Washington, May 1962
LL MS 487

A Radar Investigation of Venus
G.H. Pettengill, H.W. Briscoe, J.V. Evans, E. Gehrels, G.M. Hyde, L.G. Kraft, Jr., R. Price, W.B. Smith
Astron. J. 67, 181-190 (May 1962) LL JA 1919

The Scale of the Solar System
The Staff, Millstone Radar Observatory
Nature 190, 592 (13 May 1961) LL JA 1760

Radar Echoes from Venus and a New Determination of the Solar Parallax
G.H. Pettengill, R. Price
Planet. Space Sci. 5, 71-74 (1961) LL JA 1597

Radar Echoes from Venus
R. Price, P.E. Green, Jr., T.J. Goblick, Jr., R.H. Kingston, L.G. Kraft, Jr., G.H. Pettengill, R. Silver, W.B. Smith
Science 129, 751-753 (20 Mar. 1959) LL JA 1243

Galactic & Extra-Galactic Radio Astronomy

Radiometric Mapping of the Region of the Orion Nebula
M.L. Meeks, M. Gordon
Accepted by Astrophys. J. (1968) LL MS 2008

Observations of Galactic OH Emissions
J.A. Ball, M.L. Meeks
Astrophys. J., probably Aug. 1968

Spectral Line Interferometry and Interferometer Noise Analysis
A.E.E. Rogers
16 Jan. 1968, 22 pp. LL TR 441 DDC AD-666038
CFSTI AD-666038

Observations of the Radio Sources 3C 84, 3C 273, 3C 274, and 3C 279 at Short Centimeter Wavelengths
R.J. Allen, A.H. Barrett, P.P. Crowther
Astrophys. J. 151, 43-52 (Jan. 1968)

8 GHz Emission Lines from the Orion Nebula
M.A. Gordon
NEREM Record 9, 208-209 (1967) LL MS 2050

Interferometric Spectral Line Observations
J.M. Moran, Jr., A.E.E. Rogers
NEREM Record 9, 210-211 (1967)

Advances in Spectral Line Radio Astronomy
A.H. Barrett
NEREM Record 9, 206 (1967)

Radio Observations of Interstellar Hydroxyl Radicals
A.H. Barrett
Science 157, 881-889 (25 Aug. 1967)

New Method for the Detection of Light Deflection by Solar Gravity
I.I. Shapiro
Science 157, 806-808 (18 Aug. 1967) LL JA 3011A

Spectral Line Interferometry with Independent Time Standards at Stations Separated by 845 Kilometers
J.M. Moran, P.P. Crowther, B.F. Burke, A.H. Barrett, A.E.E. Rogers, J.A. Ball, J.C. Carter, C.C. Bare
Science 157, 676-677 (11 Aug. 1967) LL JA 3098 DDC AD-661152

Observation of the 94α and 148δ Hydrogen and 94α Helium Emission Lines in the Orion Nebula
M.A. Gordon, M.L. Meeks
Astrophys. J. 149, L21-25 (July 1967) LL JA 3064 DDC AD-658911

Absolute Measurements of the Radio Flux from Cassiopeia A and Tarus A at 3.64 and 1.94 cm.
R.J. Allen, A.H. Barrett
Astrophys. J. 149, 1-13 (July 1967)

Observations of OH Emission in the H II Region W3 with a 74400λ Interferometer
J.M. Moran, A.H. Barrett, A.E.E. Rogers, B.F. Burke, B. Zuckerman, H. Penfield, M.L. Meeks
Astrophys. J. 148, L69-72 (May 1967) LL JA 3033 DDC AD-652914

The Positions and Angular Extent of OH Emission Associated with the H II Regions W3, W24, W49, and NGC 6334
A.E.E. Rogers, J.M. Moran, P.P. Crowther, B.F. Burke, M.L. Meeks, J.A. Ball, G.M. Hyde
Astrophys. J. 147, 369-377 (Jan. 1967) LL JA 2926 DDC AD-649278

Angular Size of OH Emission Regions
B.F. Burke, P.P. Crowther, J.M. Moran, A.E.E. Rogers, J.A. Ball, G.M. Hyde, M.L. Meeks
Radio Astronomy and the Galactic System pp. 71-72, H. van Voerden, ed. (Academic Press, 1967) (Abstract only)

Galactic & Extra-Galactic Radio Astronomy (continued)

Radio Observations of the Galactic Center Region
D. Downes, A. Maxwell
Astrophys. J. 146, 653-665 (Dec. 1966)

Maser Model for Interstellar OH Microwave Emission
M.M. Litvak, A.L. McWhorter, M.L. Meeks, H.J. Zeiger
Phys. Rev. Letters 17, 821-822 (10 Oct. 1966)
LL JA 2847 DDC AD-648050

Maser Emission at 18 cm from Interstellar OH
M.M. Litvak. A.L. McWhorter, M.L. Meeks, H.J. Zeiger
NEREM Record 8, 188-189 (1966) LL MS 1719 DDC AD-649359

Brightness Distribution of Radio Sources at 2-Centimeter Wavelength
S.H. Zisk
Science 153, 1107-1109 (2 Sept. 1966)

Stokes Parameters for 1665-Megacycles-per-Second Emission from OH near Source W3
M.L. Meeks, J.A. Ball, J.C. Carter, R.P. Ingalls
Science 153, 978-981 (26 Aug. 1966) LL JA 2836 DDC AD-644783

Interferometric Study of Cosmic Line Emission at OH Frequencies
A.E.E. Rogers, J.M. Moran, P.P. Crowther, B.F. Burke, M.L. Meeks, J.A. Ball, G.M. Hyde
Phys. Rev. Letters 17, 450-451 (22 Aug. 1966)
LL JA 2858 DDC AD 645681

Upper Limit on 2- and 3.75 Centimeter Radiation from Blue Stellar Objects
I.I. Shapiro, S. Weinreb
Astrophys. J. 143, 598-599 (Feb. 1966) LL JA 2648 DDC AD 635326

Radio Structure of the Galactic Center Region
D. Downes, A. Maxwell, M.L. Meeks
Nature 208, 1189-1190 (18 Dec. 1965) LL JA 2699 DDC AD 635327

Observations of Polarized OH Emission
S. Weinreb, M.L. Meeks, J.C. Carter, A.H. Barrett, A.E.E. Rogers
Nature 208, 440-441 (30 Oct. 1965) LL JA 2665

High-Resolution Microwave Spectra of H and OH Absorption Lines of Cassiopeia A
A.H. Barrett, M.L. Meeks, S. Weinreb
Nature 202, 475-476 (2 May 1964) LL JA 2348

Radio Observations of OH in the Interstellar Medium
S. Weinreb, A.H. Barrett, M.L. Meeks, J.C. Henry
Nature 200, 829-831 (30 Nov. 1963) LL JA 2288

Galactic & Extra-Galactic Radio Astronomy (continued)

Radiometric Measurements at 8.5-mm Wavelength with a 28-Foot Antenna During December 1962
V.L. Lynn, M.D. Sohigian, M.L. Meeks
8 Oct. 1963, 27 pp. LL TR 330 DDC AD-430926 CFSTI AD-430926

Satellites, Meteors, etc.

The Last of the West Ford Dipoles
I.I. Shapiro
Science 154, 1445-1448 (16 Dec. 1966) LL JA 2807 DDC AD-653675

Radio-Echo Studies of Meteors at 68-Centimeter Wavelength
J.V. Evans
J. Geophys. Res. 70, 5395-5416 (1 Nov. 1965)
LL JA 2521A DDC AD-626897

Radar Observations of Meteor Deceleration
J.V. Evans
J. Geophys. Res. 71, 171-188 (1 Jan. 1966)
LL JA 2451A DDC AD-630368
or Meteor Orbits and Dust Symposium, Proc., Aug. 1965 NASA Sp 135
or Smithsonian Contributions to Astrophysics 11, 133-149 (1967)
LL MS 1330

The West Ford Payload
P. Waldron, D.C. MacLellan, M.C. Crocker
Proc. IEEE 52, 571-576 (May 1964) LL JA 2317-8

The Lincoln Laboratory West Ford Program - An Historical Perspective
C.F.J. Overhage, W.H. Radford
Proc. IEEE 52, 452-454 (May 1964) LL JA 2317-1

Radio-Echo Studies of Meteors at 68-cm Wavelength. Part II: Shower Meteors
J.V. Evans. R.A. Brockelman
15 Jan. 1964, 59 pp. LL TR 341 DDC AD-601518 CFSTI AD-601518

Millstone Hill Radar Station Results of Long-Baseline Radar Interferometer Studies
E. Gehrels
7 Nov. 1963, 48 pp. LL TR 335 DDC AD-438425 CFSTI AD-438425

Radio-Echo Studies of Meteors at 68-cm Wavelength. Part I: Sporadic Meteors
J.V. Evans, R.A. Brockelman
29 Oct. 1963, 59 pp. LL TR 332 DDC AD-439354 CFSTI AD-439354

Experimental Study of Charge Drag on Orbiting Dipoles
I.I. Shapiro, I. Maron, L.G. Kraft Jr.
J. Geophys. Res. 68, 1845-1850 (1 April 1963)
LL JA 2007A

Project WEST FORD Status Report
Lincoln Laboratory Staff
URSI Information Bulletin, No. 130, Jan.-Feb. 1962;
or Microwave Journal 5, 69-70, 72, 75-76 (Oct. 1962)

Predictions of Satellite Orbits
I.I. Shapiro
Symposium on Dynamics of Satellites, May 1962, pp. 257-312 (Springer-Verlag 1963)
LL MS 538

Radar Cross-Section Observations of the Echo I Communications Satellite at 440 Mc/s
D.P. Hynek
19 Feb. 1962, 94 pp. LL GR 30G-2 DDC AD-274065
CFSTI AD-274065

A New Technique for Investigation of Meteor Echoes at UHF
G.H. Pettengill
J. Geophys. Res. 67, 409-411 (Jan. 1962) LL JA 1832A

Interferometer Techniques Applied to Radar
E. Gehrels, A. Parsons
Trans. IRE, MIL-5, 139-146 (April 1961) LL JA 1698

The Millstone Radar in Satellite and Missile Tracking
J.S. Arthur, J.C. Henry, G.H. Pettengill, P.B. Sebring
Planet. Space Sci. 7, 81-93 (1961) LL JA 1423A

Some Results of Estimating Satellite Elements from Millstone Hill Averaged Data
H.D. Fridman
2 Nov. 1960, 32 pp. LL GR 22G-0039 DDC AD-246781
CFSTI PB-153220

Digital Tracking Loop for High-Powered, Experimental Radar
E.C. Fraser
12 Sept. 1960, 81 pp. LL GR 30G-0010 DDC AD-649988
CFSTI AD-649988

Millstone Operations Related to the Pioneer V Space Probe
R.R. Silva
23 June 1960, 16 pp. LL GR 30G-0007 DDC AD-239345
H-117 M-1.50 P-5.80

A Summary of Millstone Hill Results for the TIROS I Satellite Launching
G.H. Pettengill
16 May 1960, 30 pp. LL GR 30G-0005 DDC AD-237124
H-100 M-1.50 P-9.70

Satellites, Meteors, etc. (continued)

Millstone Observations During the NASA Shotput IV Experiment
D.P. Hynek
20 Apr. 1960, 14 pp. LL GR 30G-0004 DDC AD-236129
H-85 M-1.50 P-5.20

A Preliminary Investigation of Meteor Echoes at UHF
G.H. Pettengill, V.C. Pineo
16 Mar. 1960, 10 pp. LL GR 30-0003 DDC AD-235669
H-67 M-1.50 P-3.70

Millstone Observations During the NASA Shotput III Experiment, 27 February 1960
P.B. Sebring
2 Mar. 1960, 17 pp. LL GR 30-0002 DDC AD-235668
H-66 M-1.50 P-6.10

Millstone Observations on NASA Shotput II Balloon, 16 January 1960, and Preliminary Conclusions
P.B. Sebring
29 Jan. 1960, 12 pp. LL GR 30-0001 DDC AD-235667
H-65 M-1.50 P-4.60

Introduction to an Investigation of a Technique for Smoothing Radar Returns from an Artificial Earth Satellite
F. Levine
15 Jan. 1960, 27 pp. LL GR 22G-0018 DDC AD-233268
H-49 M-1.50 P-8.80

Earth Satellite Observations Made with the Millstone Hill Radar
G.H. Pettengill, L.G. Kraft, Jr.
Avionics Research, AGARD No. 40, 125-134 (1958)
LL JA 1128

Atmosphere

Doppler Spectrum of Auroral Echoes at 1295 MHz
W.G. Abel, R.E. Newell
URSI, Washington D.C. 9-12 April 1968 LL MS 2250

On the Sunrise Behavior of the F Layer at Midlatitudes
J.V. Evans
J. Geophys. Res. (Submitted 1968) LL JA 3138

Millstone Hill Thomson Scatter Results for 1964
J.V. Evans
15 Nov. 1967, 52 pp. LL TR 430

Measurements of the Afternoon Radio Aurora at 1295 MHz
W.G. Abel, R.E. Newell
URSI Fall Meeting, University of Michigan, Digest of papers pp. 33-34 (Oct. 1967)
LL MS 2080

The Effectiveness of Transhorizon Propagation Mechanisms in Causing Interference Between Microwave Ground Stations
R.K. Crane
URSI Fall Meeting, University of Michigan, Digest of papers pp. 23-24 (Oct. 1967)
LL MS 2081

Comparison of Rainfall Attenuation at 8.0 GHz as Computed from Radiometer and from Weather Radar Measurements
R.K. Crane
URSI Fall Meeting, University of Michigan, Digest of papers pp. 21-22 (Oct. 1967)
LL MS 2078

Midlatitude F-Region Densities and Temperatures at Sunspot Minimum
J.V Evans
Planet. Space Sci. 15, 1387-1405 (Sept. 1967)
LL JA 2884 DDC AD-658837
CFSTI.AD-658837

Electron Temperature and Ion Composition in the F_1 Region
J.V. Evans
J. Geophys. Res. 72, 3343-3355 (July 1, 1967)
LL JA 2883

Ground-Based Measurements of Atmospheric and Ionospheric Particle Temperatures
J.V. Evans
Solar-Terrestrial Physics, Chapt. IX, pp. 289-340 (Academic Press, 1967)

Ionospheric Backscatter Observations at Millstone Hill
J.V. Evans
Planet. Space Sci. 13, 1031-1074 (Nov. 1965)
LL JA 2548A DDC AD-616607

A Comparison of Rocket, Satellite, and Radar Determinations of Electron Temperature at Midlatitudes
J.V. Evans
J. Geophys. Res. 70, 4365-4374 (1 Sept. 1965)
LL JA 2553 DDC AD-623603

Cause of the Midlatitude Winter Night Increase in f_oF_2
J.V. Evans
J. Geophys. Res. 70, 4331-4345 (1 Sept. 1965)
LL JA 2569 DDC AD-623606

Midlatitude Ionospheric Temperatures on Magnetically Quiet and Disturbed Days
J.V. Evans
J. Geophys. Res. 70, 2726-2732 (1 June 1965)
LL JA 2512 DDC AD-621233

Cause of the Mid-Latitude Evening Increase in f_oF_2
J.V. Evans
J. Geophys. Res. 70, 1175-1185 (1 Mar. 1965)
LL JA 2479 DDC AD-614310

On the Behavior of f_oF_2 During Solar Eclipses
J.V. Evans
J. Geophys. Res. 70, 733-738 (1 Feb. 1965)
LL JA 2434 DDC AD-613889

Ionospheric Backscatter Observations at Millstone Hill
J.V. Evans
22 Jan. 1965, 71 pp. LL TR 374 DDC AD-616607
CFSTI AD-616607

An F Region Eclipse
J.V. Evans
J. Geophys. Res. 70, 131-142 (1 Jan. 1965)
LL JA 2371 DDC AD-613886

Ionospheric Backscatter Observations at Millstone Hill
J.V. Evans
Electron Density Profiles in Ionosphere and Exosphere pp. 399-445 (Proc. 1965 NATO Advanced Studies Institute.) (North-Holland, Amsterdam, 1966)
LL JA 2548

Concluding Remarks on Ionospheric F Region Temperatures
J.V. Evans
Electron Density Profiles in Ionosphere and Exosphere pp. 616-621 (Proc. 1965 NATO Advanced Study Institute) (North-Holland, Amsterdam, 1966)

Ionospheric Investigations by the Faraday Rotation of Incoherent Backscatter
G.H. Millman, V.C. Pineo, D.P. Hynek
J. Geophys. Res. 69, 4051-4065 (1 Oct. 1964)
LL JA 2435 DDC AD-453364

Ionospheric Backscatter Observations
J.V. Evans, M. Loewenthal
Planet. Space Sci. 12, 915-944 (Oct. 1964)
LL JA 2356

Ionospheric Temperatures During the Launch of NASA Rocket 8.14 on July 2, 1963
J.V. Evans
J. Geophys. Res. 69, 1436-1444 (1 April 1964)
LL JA 2299

The Microwave Spectrum of Oxygen in the Earth's Atmosphere
M.L. Meeks, A.E. Lilley
J. Geophys. Res. 68, 1683-1703 (15 Mar. 1963)
LL JA 2009

Incoherent Backscatter Studies of the Ionosphere at Millstone Hill
J.V. Evans
Electron Density Distribution in the Ionosphere & Exosphere pp. 266-304
(Proc. 1963 NATO Advanced Study Institute)(North-Holland, Amsterdam 1964)
LL MS 836

Electron-to-Ion Temperature Ratios
J.V. Evans
Electron Density Distribution in the Ionosphere & Exosphere pp. 387-392
(Proc. 1963 NATO Advanced Study Institute) (North-Holland, Amsterdam 1964)

Spectral Widths and Shapes and Other Characteristics of Incoherent Backscatter from the Ionosphere Observed at 440 Mcps during a 24-Hour Period in May 1961
V.C. Pineo, D.P. Hynek
J. Geophys. Res. 67, 5119-5129 (Dec. 1962)
LL JA 1983

Diurnal Variation of the Temperature of the F Region
J.V. Evans
J. Geophys. Res. 67, 4914-4920 (Nov. 1962)
LL JA 1966

Studies of the F-Region by the Incoherent Backscatter Method
J.V. Evans
24 July 1962, 59 pp. LL TR 274 DDC AD-292730
CFSTI AD-292730

Experimental Studies of the F Region Using the Incoherent Backscatter Technique at Frequencies Around 400 Mc/s
V.C. Pineo, L.G. Kraft, H.W. Briscoe, D.P. Hynek
Electron Density Profiles pp. 358-367 (Pergamon Press, New York, 1962)
LL MS 253A

Distribution of Electrons in the F Region
J.V. Evans
15 Sept. 1961, 35 pp. LL GR 30G-0014 DDC AD-263902
CFSTI AD-263902

The Distribution of Electrons in the Upper Ionosphere from Backscatter Observations
J.V. Evans
3 Apr. 1961, 9 pp. LL GR 3G-0002 (Suppl. 1) DDC AD-254143
CFSTI PB-155671

The Distribution of Electrons in the Upper Ionosphere from Backscatter Observations
J.V. Evans
23 Nov. 1960, 20 pp. LL GR 3G-0002 DDC AD-247860
CFSTI PB-153484

Atmosphere (continued)

Some Characteristics of Ionospheric Backscatter Observed at 440 Mc/s
V.C. Pineo, L.G. Kraft, H.W. Briscoe
J. Geophys. Res. 65, 2629-2633 (Sept. 1960)
LL MS 10A

Ionospheric Backscatter Observation at 440 Mcps
V.C. Pineo, L.G. Kraft, H.W. Briscoe
J. Geophys. Res. 65, 1620-1621 (May 1960)
LL JA 1593

Observed Characteristics of an Ultra-High-Frequency Signal Traversing an Auroral Disturbance
J.C. James, L.E. Bird, R.P. Ingalls, M.L. Stone, J.W.B. Day, G.E.K. Lockwood, R.I. Presnell
Nature 185, 510-512 (20 Feb. 1960) LL JA 1448

Miscellaneous

Radio Physics and Astronomy 1966:1
M.L. Meeks, V.C. Pineo, eds.
15 Oct. 1966, 105 pp. LL Semiannual Technical Summary
DDC AD-654324
CFSTI AD-654324

Radar Astronomy at Millimeter and Submillimeter Wavelengths
J.W. Meyer
Proc. IEEE 54, 484-492 (April 1966) LL JA 2677 DDC AD-640532

Radio Physics and Astronomy 1965:1
J.W. Meyer, P.B. Sebring
15 Oct. 1965, 97 pp. LL Semiannual Technical Summary
DDC AD-629923
CFSTI AD-629923

Radar Astronomy
G.H. Pettengill, I.I. Shapiro
Ann. Rev. Astron. Astrophys. 3, 377-410 (1965)
LL JA 2582

Radar Echoes from the Sun
J.C. James
Trans. IEEE, MIL-8, 210-225 (July 1964);
or Trans. IEEE, AP-12, 876-891 (Dec. 1964) LL JA 2357 DDC AD-453366

Radar Studies of the Sun, Moon and Planets
J.H. Chisholm, G.H. Pettengill
J. Research Natl. Bur. Standards 68D, 565-567 (May 1964)
LL JA 2096A

Miscellaneous (continued)

Observations of Venus, the Region of Taurus A, and the Moon at 8.5-Millimeter Wavelength
V.L. Lynn, M.L. Meeks, M.D. Sohigian
Astron. J. 69, 65-67 (Feb. 1964) LL JA 2252

Radar Astronomy
G.H. Pettengill
Trans. Am. Geophys. Un. 44, 453-455 (June 1963)
LL JA 2096

Modern Radar
H.G. Weiss
Intl. Sci. and Tech. No. 13, 75-81 (Jan. 1963)
LL JA 2048

The Design of Radar Astronomy Instruments
H.G. Weiss
NEREM Record 3, 94-95 (1961) LL MS 328

Exploring the Solar System by Radar
P.E. Green, Jr., G.H. Pettengill
Sky and Telescope 20, 9-14 (July 1960) LL JA 1625

Instrumentation and Techniques

HAYSTACK ANTENNA Reflector Surface IMPROVEMENT PROGRAM D. G. STUART
29 JAN. 1968, 29 pp LL TN 1968-1 DDC AD671518

Aperature Synthesis in Radar Astronomy and Some Applications to Lunar and Planetary Studies
T. Hagfors, B. Nanni, K. Stone
Accepted by Radio Sci. (1968) LL JA 3116

Radar Astronomy
J.V. Evans, T. Hagfors, eds.
McGraw-Hill, 620 pp. (1968)

Discussion of Paper by F.L. Scarf, "Effect of Coherent Density Fluctuations on the Radar Determination of Total Electron Content"
T. Hagfors
J. Geophys. Res. 72, 4595-4598 (1 Sept. 1967)
LL JA 2970

Scattering and Transmission of Electro-magnetic Waves at a Statistically Rough Boundary Between Two Dielectric Media
T. Hagfors
Electromagnetic Wave Theory, pp. 997-1012 (Pergamon, 1967)
LL MS 1353

Comment on Paper by A.K. Fung and R.K. Moore "The Correlation Function in Kirchhoff's Method of Solution of Scattering of Waves from Statistically Rough Surfaces"
T. Hagfors
J. Geophys. Res. 71, 6150 (15 Dec. 1966) LL JA 2867 DDC AD-648640

Computer Control of the Haystack Antenna
F.E. Heart, A.A. Mathiasen
Proc. IEEE 54, 1742-1751 (Dec. 1966) LL JA 2833 DDC AD-654277

General-Purpose I/O Channel and Interface for Haystack 490 Computer
J.E. Gillis, A.F. Dockrey, S.B. Russell
10 Oct. 1966, 24 pp. LL TN 1966-40 DDC AD-641640
CFSTI AD-641640

Haystack Display Translator
S.B. Russell
10 Oct. 1966, 17 pp. LL TN 1966-24 DDC AD-640914
CFSTI AD-640914

A Computer Signal-Processing Approach for the Shapiro Fourth Test of the General Theory of Relativity
E. Gehrels, L.G. Kraft
2 Sept. 1966, 26 pp. LL TN 1966-23 DDC AD-639733
CFSTI AD-639733

Note on the Effect of Shadowing on the Backscattering of Waves from a Random Rough Surface
R.A. Brockelman, T. Hagfors
Trans. IEEE, AP-14, 621-629 (Sept. 1966) LL JA 2721 DDC AD-646482

Structural Analysis of the Haystack Antenna
W.R. Fanning
J. Struct. Div. ASCE 92, No. ST 1, 431-448 (Feb. 1966)
LL JA 2583 DDC AD-633180

Relationship of Geometric Optics and Autocorrelation Approaches to the Analysis of Lunar and Planetary Radar
T. Hagfors
J. Geophys. Res. 71, 379-383 (15 Jan. 1966)
LL JA 2593 DDC AD-633184

The Haystack Computer Control System
F.E. Heart, A.A. Mathiasen, P.D. Smith
27 Oct. 1965, 49 pp. LL TR 406 DDC AD-631559
CFSTI AD-631559

A Shaped Reflector as A Primary Feed For Haystack
A. Sotiropoulos
30 Sept. 1965, 21 pp. LL TN 1965-15 DDC AD-625375
CFSTI AD-625375

Radiometric Feed for Haystack
A. Sotiropoulos
15 June 1965, 25 pp. LL TN 1965-23 DDC AD-618393
CFSTI AD-618393

The Haystack Microwave Research Facility
H.G. Weiss
IEEE Spectrum 2, 50-69 (Feb. 1965) LL JA 2494 DDC AD-614734

Measurement of Properties of Spread Channels by the Two-Frequency Method with Application to Radar Astronomy
T. Hagfors
11 Jan. 1965, 19 pp. LL TR 372 DDC AD-614233
CFSTI AD-614233

Haystack Calibration Antenna
A. Sotiropoulos, J. Ruze
15 Dec. 1964, 14 pp. LL TR 367 DDC AD-611436
CFSTI AD-611436

The Haystack Experimental Facility
H.G. Weiss
15 Sept. 1964, 56 pp. LL TR 365 DDC AD-608272
CFSTI AD-608272

Note on Quantum Effects in Radiometer Observations
T. Hagfors, M.L. Meeks
Astron. J. 69, 447-449 (Aug. 1964) LL JA 2349

Computer Programs for Haystack Servo Testing
L.D. Massey
21 July 1964, 79 pp. LL GR 1964-38 DDC AD-603794
CFSTI AD-603794

Haystack-West Ford Intersite Coupling Link
J.E. Gillis
14 May 1964, 37 pp. LL GR 1964-25 DDC AD-601143
CFSTI AD-601143

Long-Range Millimeter Radars
V.L. Lynn, M.D. Sohigian
NEREM Record 5, 158-159 (1963) LL MS 896

Fast AGC Amplifier Locks Monopulse Radar on Target
W.W. Smith
Electronics 36, No. 39, 34-36 (27 Sept. 1963)
LL JA 2142

Investigation of Effects of Surface Deviations on Haystack Antenna Radiation Patterns
A.R. Dion
29 July 1963, 17 pp. LL TR 324 DDC AD-418740
CFSTI AD-418740

Experimental Evaluation of a 1000-Wave-length Antenna
W.D. Fitzgerald, V.L. Lynn, K.J. Keeping
13 May 1963, 35 pp. LL GR 46G-4 DDC AD-406109
CFSTI AD-406109

Millstone Hill Zenith-Pointing Paraboloid
M.E. Devane
7 Jan. 1963, 17 pp. LL GR 315G-4 DDC AD-401907
CFSTI AD-401907

Radar Astronomy Measurement Techniques
P.E. Green, Jr.
12 Dec. 1962, 78 pp. LL TR 282 DDC AD-400563
CFSTI AD-400563

Experimental Evaluation of a 1000-Wavelength Antenna
W.D. Fitzgerald, V.L. Lynn, K.J. Keeping
NEREM Record 4, 66-67 (1962) LL MS 621

The Haystack Experimental Facility
H.G. Weiss
NEREM Record 4, 108-109 (1962) LL MS 702

Programmed Satellite Pass Calculations
A.A. Mathiasen
28 June 1962, 55 pp. LL GR 21G-1 DDC AD-282041
CFSTI AD-282041

Estimation of Doppler Shift and Spectral Width of A Random Process
M.J. Levin
12 June 1962, 16 pp. LL GR 34G-6 DDC AD-278686
CFSTI AD-278686

A Wide Band Antenna Having Axially Symmetrical Pattern, High Gain and Low Side Lobes for All Polarizations
K.J. Keeping
30 Nov. 1960, 31 pp. LL GR 46G-0008 DDC AD-248360 CFSTI PB-153696

Design Considerations for Cassegrainian and Gregorian Reflector Type Microwave System
K.J. Keeping
25 Jan. 1960, 54 pp. LL GR 46-43 DDC AD-244400 H-174 M-1.50 P-17.20

108 Mcps Tracking Antenna for Millstone Hill Radar
M.E. Devane
1 Dec. 1959, 12 pp. LL GR 315-3 DDC AD-244405 H-177 M-1.50 P-4.30

New Averaging Program for the Millstone Hill Radar Site
F. Nagy
1 Apr. 1959, 8 pp. LL GR 52-4 DDC AD-246776 H-219 M-1.50 P-3.10

Haystack Pointing Systems

Radiometric Spectral-Line Processing in the Haystack Antenna Pointing System
G.H. Conant, Jr., M.L. Meeks
2 Jan. 1968, 38 pp. LL TN 1968-1

Scan
W.R. Crowther
1 Nov. 1966, 37 pp. LL TN 1966-55 DDC AD-643171 CFSTI AD-643171

Radar Coordinate Correction
C.A. Clarke
24 Oct. 1966, 26 pp. LL TN 1966-56 DDC AD-641603 CFSTI AD-641603

Digital Equipment Organization
P.D. Smith
10 Oct. 1966, 17 pp. LL TN 1966-15 DDC AD-641641 CFSTI AD-641641

Satellite Acquisition
R. Teoste
30 Mar. 1966, 54 pp. LL TN 1966-8 DDC AD-632489 CFSTI AD-632489

Print Program
J.D. Drinan
9 Mar. 1966, 95 pp. LL TN 1966-11 DDC AD-632339
CFSTI AD-632339

Control Structure
J.D. Drinan, A.A. Mathiasen
9 Mar. 1966, 150 pp. LL TN 1966-10 DDC AD-631106
CFSTI AD-631106

Peripheral Programs
J.D. Drinan, Editor
17 Feb. 1966, 184 pp. LL TN 1966-13 DDC AD-630193
CFSTI AD-630193

Auxiliary Real-Time Programs
J.D. Drinan, Editor
31 Jan. 1966, 145 pp. LL TN 1966-6 DDC AD-629936
CFSTI AD-629936

Printer Package
A.A. Mathiasen, J.D. Drinan, eds.
4 Oct. 1965, 114 pp. LL TN 1965-38 DDC AD-622784
CFSTI AD-622784

Mathematical Development for Satellites and Belts
A.A. Mathiasen, Editor
23 Sept. 1965, 28 pp. LL TN 1965-49 DDC AD-623017
CFSTI AD-623017

Intercom
A.A. Mathiasen, J.D. Drinan, eds.
9 Sept. 1965, 181 pp. LL TN 1965-39 DDC AD-622666
CFSTI AD-622666

Belt
A.A. Mathiasen, J.D. Drinan, Editors
9 Sept. 1965, 167 pp. LL TN 1965-37 DDC AD-472590
H-677 M-1.70 P-34.60

Satellite
A.A. Mathiasen, J.D. Drinan, eds.
9 Sept. 1965, 143 pp. LL TN 1965-36 DDC AD-472589
H-676 M-2.00 P-30.20

Radiometer Data Processing in the Haystack Antenna Pointing System
P. Stylos
29 July 1965, 59 pp. LL TN 1965-14 DDC AD-620872
CFSTI AD-620872

Coordinate Conversion for the Haystack Pointing System
P. Stylos
10 Dec. 1964, 62 pp. LL GR 1964-71 DDC AD-609433
CFSTI AD-609433

Interpolation
R. Teoste
28 Oct. 1964, 25 pp. LL GR 1964-57 DDC AD-608289
CFSTI AD-608289

Stars
H.E. Frachtman
25 Sept. 1964, 62 pp. LL GR 1964-47 DDC AD-449739
CFSTI AD-449739

Ephemeris Tape Program
D.M. Hafford
25 Sept. 1964, 80 pp. LL GR 1964-41 DDC AD-450196
H-612 M-1.50 P-9.20

Planet
H.E. Frachtman
10 Sept. 1964, 37 pp. LL GR 1964-46 DDC AD-606501
CFSTI AD-606501

Moon
H.E. Frachtman
10 Sept. 1964, 33 pp. LL GR 1964-45 DDC AD-606154
CFSTI AD-606154

Sun
H.E. Frachtman
29 July 1964, 32 pp. LL GR 1964-40 DDC AD-603318
CFSTI AD-603318

Motion Picture Films
(Available from Lincoln Laboratory Distribution Office)

Imaging Radio Sources with a Digital Computer
M.L. Meeks, J.W. Meyer
16 mm B&W sound film, running time 15 minutes (April 1968)
Technical LL 16 mm Film

Haystack
16 mm Color & sound film, running time 25 minutes (Feb. 1967)
Technical description of capabilities

Inside the Haystack
16 mm B&W sound film, running time 30 minutes (April 1965)
M.I.T. Science Reporter TV program

DOCUMENT CONTROL DATA – R&D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY *(Corporate author)* Lincoln Laboratory, M.I.T.	2a. REPORT SECURITY CLASSIFICATION Unclassified 2b. GROUP None

3. REPORT TITLE

Millstone and Haystack Scientific and Technical Publications

4. DESCRIPTIVE NOTES *(Type of report and inclusive dates)*

Bibliography

5. AUTHOR(S) *(Last name, first name, initial)*

Lincoln Laboratory Library

6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
9 April 1968	30	None

8a. CONTRACT OR GRANT NO. AF 19(628)-5167 b. PROJECT NO. 649 L c. d.	9a. ORIGINATOR'S REPORT NUMBER(S) Bibliography 36 9b. OTHER REPORT NO(S) *(Any other numbers that may be assigned this report)* ESD-TR-68-56

10. AVAILABILITY/LIMITATION NOTICES

This document has been approved for public release and sale; its distribution is unlimited.

11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY
None	Air Force Systems Command, USAF

13. ABSTRACT

This document is a bibliography of most of the significant publications, in whatever form, resulting from the work conducted at the Millstone Radar Facility and the Haystack Microwave Research Facility, two of the major instruments at Lincoln Laboratory's Millstone Hill Field Station.

14. KEY WORDS

Bibliography
Radar
Millstone
Haystack

ESD-TR-68-56

Addendum to Bibliography 36

Millstone and Haystack Scientific and Technical Publications

Dated 7 May 1968

1. On page 4 in the second entry under Planets the author R.P. Engels should be R.P. Ingalls.

2. On page 17 as the first entry under Instrumentation and Techniques add:

Haystack Antenna Reflector Surface Improvement Program
D.G. Stuart
29 Jan. 1968, 29 pp. LL TN 1968-7 DDC AD-667518

Publications Office
M.I.T. Lincoln Laboratory
P.O. Box 73
Lexington, Mass. 02173

7 May 1968